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ABSTRACT

Findings are presented from the National Center for Education Statistics' 1978 Recent College Graduates Survey, which estimates the number of recent graduates and the February 1978 employment and salary status of individuals who received bachelor's degrees from July 1, 1976, to June 30, 1977. A nationally representative sample of 297 institutions was selected, and 11,729 graduates were sampled. Data are presented by major field on the percent of graduates employed full-time, their unemployment rate, the percent underemployed, and their average annual salaries. The statistics are presented separately for men and women graduates and for those who are enrolled for an advanced degree. Twenty-eight relatively specific major fields and 11 more general major fields are covered, along with majors in professional fields, arts and sciences, and other fields. Of the approximately 930,000 persons who received bachelor's degrees in the 1976-1977 academic year, an estimated 68 percent were employed full-time; but the unemployment rate was 5.8 percent, and 24 percent of those employed full-time were underemployed. The average annual salary for those employed full-time was about $11,500. Bachelor's recipients who majored in professional fields fared better than bachelor's recipients who majored in the arts and sciences. However, arts and sciences graduates were much more likely than graduates in professional fields to be enrolled for an advanced degree, which discourages working full-time. Graduates in business and management had the highest percentage of full-time employment (83 percent) and graduates in public affairs and social services had the lowest percentage (68 percent). (SW)

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Labor Force Status of Recent College Graduates

by

A. Stafford Metz

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National Center for Education Statistics

U.S. DEPARTMENT OF EDUCATION
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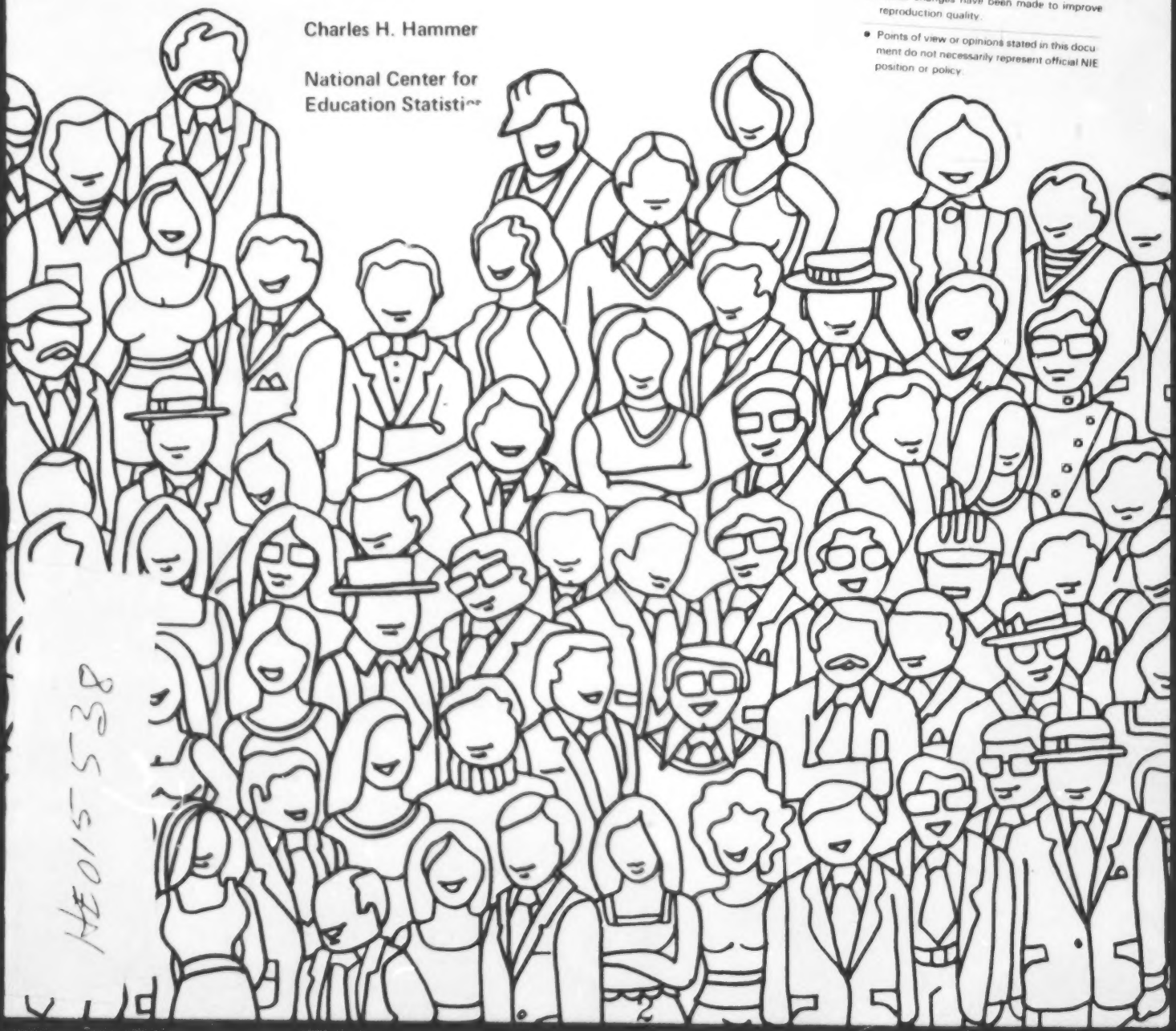

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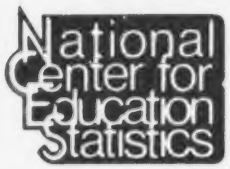

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Foreword

This report is based on data from NCES's 1978 Recent College Graduates Survey. The purpose of the survey was to estimate the number of recent graduates who were qualified to teach and determine their status in the labor force. Data included in this report, however, cover graduates in all major fields.

The survey covered individuals who received bachelor's degrees from July 1, 1976, to June 30, 1977. This was a two-stage sample survey. A nationally representative sample of 297 institutions was selected, and from these 11,729 graduates were sampled.

Data included here are presented by major field on the percent of graduates employed full-time, their unemployment rate, the percent underemployed and their average annual salaries. Some of the statistics may be distributed differently for males and females and for those who do and do not go on for an advanced degree. Therefore, the data are also presented separately for men and women graduates and for those who are enrolled and not enrolled for an advanced degree.

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Division of Elementary and
Secondary Education Statistics
December 1981

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For More Information

This is one of several reports based on the 1978 Recent College Graduates Survey. The others are:

New Teachers in the Job Market, copies of which are available from the Education Resources Information Center (ERIC). The cost is $3.95 per paper copy and $0.91 for microfiche. When ordering, use number ED 206572 and make check payable to EDRS. Send order to Document Reproduction Service, P.O. Box 190, Arlington, Virginia 22210.

Occupations of Recent College Graduates, copies of which are available from the National Technical Information Service (NTIS). The cost is $8.00 per paper copy and $3.50 for microfiche. When ordering, use accession number PB82 120890 and make check payable to the National Technical Information Service. Send order to the U.S. Department of Commerce, National Technical Information Service, 5285 Port Royal Rd., Springfield, Virginia 22161.

The computer tape containing all survey information is available from the Statistical Information Office, National Center for Education Statistics, (1001 Presidential Bldg.), 400 Maryland Ave. S.W., Washington, D.C. 20202, telephone (301)436-7900. Information about the Center's statistical program and a catalog of NCES publications may also be obtained from the Statistical Information Office.

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Introduction

For many students deliberating the choice of an academic major in college, questions about employment and earning potential following graduation are of major importance. One who wishes to be employed full-time or to use his or her college education in a job after graduation will want to know which major fields are more likely to lead to these objectives. One who gives primary importance to a well-paying job after graduation will want to know which major fields are more likely to lead to initially high-salaried jobs. This report provides information for students and others concerning the employment status, by major field, of college graduates shortly after receiving their bachelor's degrees.

The data for this report come from the 1978 Recent College Graduates Survey. This survey obtained information on the February 1978 employment and salary status of a nationally representative sample of bachelor's degree recipients who received their degrees during the period July 1, 1976, through June 30, 1977.[1] Data are presented for 28 relatively specific major fields, for 11 more general major field groups, and for bachelor's recipients with majors in professional fields, arts and sciences, and other

[1]See appendix 1 for a description of the Recent College Graduate Survey.

fields.[2] For bachelor's recipients in each major field, major field group, and for majors in professional fields, arts and sciences, and other fields, statistics are presented on the following four employment/salary status indicators:

- percent of bachelor's degree recipients employed full-time;
- unemployment rate[3];
- percent of bachelor's recipients employed who are underemployed[4];
- average annual salary for the principal job held by bachelor's degree recipients employed full-time.

Since the employment experiences of graduates enrolled for an advanced degree may be different from those not enrolled, statistics are presented separately for those two groups of graduates. The same applies to men and women graduates.

[2]See appendix 2 for the HEGIS classification of major fields used for coding purposes and appendix 3 for the major field code groupings which comprise the major field groups in the tables.

[3]Unemployed graduates are those who, during the survey week, had no employment and engaged in job-seeking activities within the preceeding 4 weeks.

[4]Underemployed graduates are those not working in professional, managerial or technical types of jobs and who reported that, in their opinion, a college degree was not required to get their job.

Findings

All Bachelor's Recipients

Approximately 930,000 persons received bachelor's degrees in the 1976-77 school year. Of this total, an estimated 68 percent were employed full-time and the unemployment rate was 5.8 percent. A substantial proportion (24 percent) of those employed full-time were underemployed. Finally, the average annual salary for those employed full-time was about $11,500.

Professional Fields Compared with Arts and Sciences

On all four employment/salary status indicators, bachelor's recipients who majored in professional fields fared better than bachelor's recipients who majored in the arts and sciences. The employment/salary status for the two groups and for all bachelor's recipients is shown below.[5]

The table above shows that the percent of arts and sciences graduates employed full-time is low compared to graduates in the professional fields. However, graduates in arts and sciences are much more likely than graduates in professional fields to be enrolled for an advanced degree (appendix 1), which discourages working full-time. When the percent enrolled for an advanced degree is eliminated from consideration (in a following section), the difference between arts and sciences and professional fields graduates for percent employed full-time is considerably less.

Major Field Groups

Within the professional fields and arts and sciences, 11 major field groups were established. Relatively small differences in percent employed full-time were found among the five major field groups within the professional fields (table 1). Graduates in business and management had the

Employment/salary status indicator

	Percent of bachelor's recipients employed full-time	Unemployment rate	Percent of bachelor's recipients employed full-time who are underemployed	Average salary for principal job held by bachelor's recipients employed full-time
All bachelor's recipients	68	5.8	24	$11,500
Professional fields	79	3.9	15	12,300
Arts and sciences	54	8.4	34	10,300

[5]The professional fields category consists of those major fields for which there are, generally, separate schools within colleges and universities, such as schools of business administration, education, nursing, social work, and engineering. Professional fields categories used in this report are business and management, education, engineering, health professions, and public affairs and social services. Major fields classified under arts and sciences fall primarily under the general umbrella of arts and science programs. The arts and science categories used in this report are biological sciences, mathematics, physical sciences, social sciences, humanities, and psychology.

highest percentage of full-time employment (83 percent), and graduates in public affairs and social services had the lowest percentage (68 percent). The unemployment rate varied little from a low of 3.2 percent for graduates in business and management to a high of 5.4 percent for graduates in public affairs and social services. With the exception of public affairs and social services, the percentage of graduates employed full-time who were underemployed ranged from 2 percent for majors in the health professions to 19 percent for majors in business and management. Underemployment for public affairs and social services graduates was 39 percent.[6] Engineering graduates had the highest average salary ($15,500) and education majors the lowest ($9,500).[7]

Data for arts and science graduates for the individual major fields in terms of percent employed full-time are misleading because of the impact of enrollment for an advanced degree, as discussed previously. The reader is, therefore, referred to the following section where the labor force outcome of graduates not enrolled and enrolled for an advanced degree is looked at separately.

In examining unemployment for arts and sciences graduates, considerable variation was found (table 1). No mathematics graduates in the survey sample experienced unemployment. At the other extreme, the unemployment rates for humanities and biological sciences graduates were high (10.7 and 10.5 respectively). In the case of underemployment, graduates in the physical sciences had the lowest percentage of underemployment (18 percent) and those in the humanities had the highest (43 percent). Physical sciences graduates had the highest average annual salary, $11,500, and graduates in the humanities the lowest, $9,000.[8]

[6]The fields within this field group are heterogeneous and some may have a percentage underemployed which is significantly lower or higher than the percentage reported for the field group.

[7]One factor contributing to the low salaries for education majors is the fact that most education majors have teaching as their principal job and teachers generally work on 9- or 10-month rather than 12-month contracts.

[8]For the occupations held by graduates who majored in biological sciences, and by graduates who majored in other fields, see *Occupations of Recent College Graduates*, National Center for Education Statistics, 1981.

Examination of the major field groups for all four indicators collectively showed that graduates in engineering fared particularly well. This group was high on full-time employment (81 percent) and salary ($15,500) and low on both unemployment (5.0) and underemployment (6 percent). Graduates in the health professions and in business and management also fared well, though not quite as well as engineering graduates. The average annual income for health professions graduates was not as high as for engineering graduates, and business and management graduates' underemployment percent was considerably higher than that for engineering graduates. At the other extreme, graduates in the humanities did not fare well. They had the highest rate of unemployment (10.7), the highest percentage of underemployment (43 percent), and the lowest average annual salary ($9,000).

Labor Force Status of Bachelor's Recipients Enrolled and Not Enrolled for an Advanced Degree

It was indicated in the previous section that graduates who majored in the arts and sciences were much more likely to be enrolled for an advanced degree than were majors in the professional fields. Being enrolled and not enrolled for a degree impacts, in turn, on labor market outcome, particularly in terms of the extent of full-time employment. For this reason, the labor market outcome for those graduates in the different major fields who were not enrolled for an advanced degree is looked at separately in this section and is then contrasted with those who were enrolled for an advanced degree.

When only those not enrolled for an advanced degree are examined, the difference between graduates in the professional fields and arts and sciences, for those employed full-time (85 and 73 percent respectively) was considerably smaller than the difference indicated earlier for all graduates (79 compared to 54 percent). For those not enrolled for an advanced degree, therefore, arts and

science majors did not fare nearly as badly in terms of full-time employment as they did in the case of all graduates. For those not enrolled for an advanced degree, engineering, health professions and business and management had the highest proportion employed full-time (ranging from 93 to 89 percent) and psychology and humanities were lowest (69 and 68 percent respectively) (table 2).

When examined separately, the unemployment rate for graduates not enrolled for an advanced degree was not materially different from that for all graduates (5.3 percent and 5.8 percent respectively). This also applies to the percent underemployed and average salaries, which is to be expected, since these are based only on graduates employed full-time. The bulk of these graduates were not enrolled for an advanced degree.

As was anticipated, the percent of graduates working full-time who were enrolled for an advanced degree was quite different from the percent not enrolled—32 and 80 percent respectively (tables 2 and 3). These differences held up across all major field groups. Differences between graduates enrolled and not enrolled for an advanced degree were generally negligible for each of the other three employment/salary indicators, except in certain cases where the unemployment rate was higher for those enrolled for an advanced degree.

Labor Force Status of Men and Women Bachelor's Recipients

With one exception[9], the only striking differences between men and women on the four labor force status indicators was that men's average annual salaries were higher than women's (tables 2 and 3). Only in the case of biological sciences did women have a higher average annual salary than men. This indicates that in some respects, women have achieved a measure of equalization in their labor force status relative to men but are still lagging with respect to income.

Labor Force Status of Bachelor's Recipients in Individual Major Fields

Data on the four labor force status indicators for 28 major fields are presented in table 6. This table can serve as a reference source for persons interested in more specific fields.[10] It can be seen, for example, that for bachelor's recipients majoring in business, management and administration, 81 percent were employed full-time and they had an unemployment rate of 3.5. Of those employed full-time, 28 percent were underemployed and the average annual salary was $13,000. For graduates in letters, on the other hand, 54 percent were employed full-time, their unemployment rate was 11.8, 42 percent were underemployed and they had an average annual salary of $9,000. The sample size was not large enough to reliably separate the more detailed major fields into those not enrolled and enrolled for an advanced degree. However, it must be remembered that, for the arts and science fields, the proportion not enrolled for an advanced degree who are employed full-time would be considerably larger.

[9]Considerable differences existed in the percentages between men and women graduates in public affairs and social services who were employed full-time and underemployed. These differences, however, are not of major importance because of the heterogeneity of the fields within this field group and the likelihood that the pattern of distribution of men across their fields is likely to be different from that of women.

[10]Data are provided for major fields which numbered 8,200 or more bachelor's recipients.

Tables

Table 1.—Employment/salary status in February 1978 of 1976-77 bachelor's degree recipients, by major field groups

Major field group	Total bachelor's recipients	Employment/salary indicator			
		Percent of total bachelor's recipients who are employed full-time	Unemployment rate	Percent of bachelor's recipients employed full-time who are underemployed	Average annual salary for principal job held by bachelor's recipients employed full-time
Total	929,800	68	5.8	24	$ 11,500
Professional fields	437,100	79	3.9	15	12,300
Business and management	162,200	83	3.2	19	13,300
Education	138,200	74	4.1	15	9,500
Engineering	54,400	81	5.0	6	15,500
Health professions	61,300	79	3.9	2	12,500
Public affairs and social services	21,100	68	5.4	39	11,500
Arts and sciences	369,400	54	8.4	34	10,300
Biological sciences	69,000	46	10.5	27	9,800
Mathematics	13,100	70	0.0	21	11,400
Physical sciences	23,200	52	2.7	18	11,500
Psychology	57,800	54	5.4	36	10,400
Social sciences	118,100	55	9.4	35	11,200
Humanities	88,100	57	10.7	43	9,000

Note: Included in the total are graduates in fields classified as other than professional fields or arts and sciences. These other fields are shown in table 6.

Table 2.—Employment/salary status in February 1978 of 1976-77 bachelor's degree recipients, by major field groups, not enrolled for an advanced degree

Major field group	Total bachelor's recipients	Employment/salary indicator			
		Percent of total bachelor's recipients who are employed full-time	Unemployment rate	Percent of bachelor's recipients employed full-time who are under-employed	Average annual salary for principal job held by bachelor's recipients employed full-time
Total	694,400	80	5.3	23	11,500
Professional fields	361,200	85	3.6	14	12,300
Business and management	137,600	89	2.9	19	13,400
Education	113,500	78	4.2	15	9,500
Engineering	43,800	93	4.5	6	15,500
Health professions	50,600	90	1.9	2	12,500
Public affairs and social services	15,700	75	7.2	40	11,500
Arts and sciences	235,300	73	7.9	34	10,300
Biological sciences	34,800	77	9.4	25	9,700
Mathematics	9,100	84	0.0	24	11,000
Physical sciences	12,500	81	2.5	18	11,700
Psychology	38,000	69	6.0	35	10,400
Social sciences	75,500	74	7.2	35	11,000
Humanities	65,400	68	11.2	43	9,100

Note: Included in the total are graduates in fields classified as other than professional fields or arts and sciences. These other fields are shown in table 6, but not by enrollment status.

Table 3.—Employment/salary status in February 1978 of 1976-77 bachelor's degree recipients, by major field groups, enrolled for an advanced degree

Major field group	Total bachelor's recipients	Employment/salary indicator			
		Percent of total bachelor's recipients who are employed full-time	Unemployment rate	Percent of bachelor's recipients employed full-time who are under-employed	Average annual salary for principal job held by bachelor's recipients employed full-time
Total	235,300	32	8.0	26	11,500
Professional fields	75,900	48	6.1	16	11,900
Business and management	24,600	50	5.2	17	13,100
Education	24,600	59	3.6	16	9,700
Engineering	10,600	35	8.2	5	15,200
Health professions	10,700	29	17.5	5	12,700
Public affairs and social services	5,400	47	0.0	36	11,400
Arts and sciences	134,200	22	9.9	37	10,800
Biological sciences	34,200	14	13.3	25	10,500
Mathematics	4,000	38	0.0	5	14,600
Physical sciences	10,800	18	3.0	20	9,900
Psychology	19,900	27	3.4	44	9,800
Social sciences	42,600	23	14.7	38	13,000
Humanities	22,700	27	8.9	43	7,700

Note: Included in the total are graduates in fields classified as other than professional fields or arts and sciences. These other fields are shown in table 6, but not by enrollment status.

Table 4.—Employment/salary status in February 1978 of 1976-77 bachelor's degree recipients, by major field groups, male

Major field group	Total bachelor's recipients	Employment/salary indicator			
		Percent of total bachelor's recipients who are employed full-time	Unemployment rate	Percent of bachelor's recipients employed full-time who are under-employed	Average annual salary for principal job held by bachelor's recipients employed full-time
Total	512,000	70	5.2	25	12,800
Professional fields	236,500	83	3.2	17	13,800
Business and management	124,000	85	2.1	20	14,000
Education	34,500	83	4.2	18	10,500
Engineering	51,900	82	4.8	7	15,500
Health professions	15,500	74	5 6	2	13,900
Public affairs and social services	10,500	82	2.6	49	13,900
Arts and sciences	204,500	54	8.1	32	11,300
Biological sciences	47,200	42	10.8	32	9,700
Mathematics	27,500	68	0.0	17	12,200
Physical sciences	71,500	52	2.0	20	12,000
Psychology	33,600	62	6.1	28	11,300
Social sciences	24,600	55	8.2	31	12,500
Humanities	70,200	61	11.7	46	9,700

Note: Included in the total are graduates in fields classified as other than professional fields or arts and sciences. These other fields are shown in table 6, but not separately by sex.

Table 5.—Employment/salary status in February 1978 of 1976-77 bachelor's degree recipients, by major field groups, female

Major field group	Total bachelor's recipients	Employment/salary indicator			
		Percent of total bachelor's recipients who are employed full-time	Unemployment rate	Percent of bachelor's recipients employed full-time who are under-employed	Average annual salary for principal job held by bachelor's recipients employed full-time
Total	416,500	66	6.6	22	$ 9,700
Professional fields	200,100	74	4.8	11	10,300
Business and management	38,000	77	7.1	15	11,100
Education	103,200	72	4.1	13	9,100
Engineering	2,500	—	—	—	—
Health professions	45,700	81	3.4	2	12,100
Public affairs and social services	10,600	53	8.6	23	8,300
Arts and sciences	164,300	54	8.6	37	9,200
Biological sciences	21,600	53	10.1	16	10,100
Mathematics	4,800	—	—	—	—
Physical sciences	3,800	—	—	—	—
Psychology	33,200	49	4.7	44	9,500
Social sciences	46,300	56	10.0	41	9,400
Humanities	54,500	55	10.1	41	8,500

—Number of graduates in sample too small to make reliable estimates.

Note: Included in the total are graduates in fields classified as other than professional fields or arts and sciences. These other fields are shown in table 6, but not separately by sex.

Table 6.—Employment/salary status in February 1978 of 1976-77 bachelor's recipients by specific major fields.

Major field group	Total bachelor's recipients	Employment/salary indicator			
		Percent of total bachelor's recipients who are employed full-time	Unemployment rate[1]	Percent of bachelor's recipients employed full-time who are underemployed[2]	Average annual salary for principal job held by bachelor's recipients employed full-time
Total	929,800	68	5.8	24	11,500
Professional fields	437,100	79	3.9	15	12,300
Business and management	162,200	83	3.2	19	13,300
Business and commerce, general	12,000	78	1.8	27	12,600
Accounting	44,100	89	2.5	4	13,700
Business, management, and administration	70,000	81	3.5	28	13,000
Marketing and purchasing	17,600	82	4.7	22	14,700
Other business and management	18,600	86	3.3	18	12,700
Education	138,200	74	4.1	15	9,500
Elementary education, general	49,600	74	4.9	12	9,200
Special education	18,800	81	3.4	8	9,200
Physical education	17,400	73	6.1	20	10,500
Other education	52,300	73	3.0	19	9,600
Engineering	54,400	81	5.0	6	15,500
Civil, construction, and transportation engineering	12,900	90	3.0	5	15,300
Electrical, electronics and communications engineering	13,300	77	7.5	0	15,300
Other	28,200	79	4.7	10	15,600
Health professions	61,300	79	3.9	2	12,500
Nursing	31,200	84	2.6	0	12,600
Pharmacy	9,200	73	9.9	0	12,500
Other	20,900	75	3.4	7	12,300
Public affairs and social services	21,100	68	5.4	39	11,500
Social work and helping services	9,400	70	6.0	36	10,000
Other	11,700	66	5.0	42	12,800
Arts and sciences	369,400	54	8.4	34	10,300
Biological sciences	69,000	46	10.5	27	9,800
Biology, general	40,600	49	7.7	23	9,800
Other	28,500	41	14.8	33	9,800
Mathematics	13,100	70	0.0	21	11,400
Physical sciences	23,200	52	2.7	18	11,500
Chemistry, general	12,100	53	3.0	13	10,800
Other	11,200	50	2.3	24	12,300
Psychology	57,800	54	5.4	36	10,400
Social sciences	118,100	55	9.4	35	11,200
Economics	16,800	59	8.8	15	13,200
History	30,300	55	5.1	52	10,900
Political science and government	27,600	46	12.0	34	10,800
Sociology	23,800	60	13.9	30	9,700
Other	19,500	60	6.0	34	12,100

Table 6.—Employment/salary status in February 1978 of 1976-77 bachelor's recipients by specific major fields—Continued.

Major field group	Total bachelor's recipients	Employment/salary indicator			
		Percent of total bachelor's recipients who are employed full-time	Unemployment rate[1]	Percent of bachelor's recipients employed full-time who are underemployed[2]	Average annual salary for principal job held by bachelor's recipients employed full-time
Humanities	88,100	57	10.7	43	9,000
Fine and applied arts	38,700	61	10.8	44	9,000
Foreign languages	10,800	56	7.0	41	9,200
Letters	38,600	54	11.8	42	9,000
Other	120,600	68	6.8	29	11,200
Agriculture and natural resources	17,000	72	6.0	32	11,000
Journalism	9,100	83	3.2	26	9,900
Architecture	8,200	65	9.9	16	11,900
Home economics	17,400	64	5.1	39	8,700
Law enforcement and corrections	18,100	86	3.7	69	13,600
Other	50,800	66	8.1	50	12,100

[1] Unemployed graduates are those who, during the survey week, had no employment and engaged in job-seeking activities within the past four weeks.

[2] Underemployed graduates are those not working in professional, managerial, or technical types of jobs and who reported that, in their opinion, a college degree was not required to get their job.

Appendixes

Appendix 1

Proportions of Graduates in the Major Field Groups, By Sex and by Enrollment Status

The following table shows the proportions of graduates in the major field groups broken down by sex and by whether or not they are enrolled for an advanced degree.

Major field	Total	Enrolled for an advanced degree	Not enrolled for an advanced degree	Male	Female
		(percent)			
Total bachelor's recipients	100	25	75	55	45
Total professions	100	17	83	54	46
Business and management	100	15	85	76	24
Education	100	18	82	25	75
Engineering	100	11	81	95	5
Health professions	100	17	83	25	75
Public affairs and social services	100	26	74	50	50
Total arts and sciences	100	36	64	55	45
Biological sciences	100	50	50	69	31
Mathematics and physical sciences	100	41	59	76	24
Social sciences	100	36	64	61	39
Humanities	100	26	74	38	62
Psychology	100	34	66	43	57

Appendix 2

Survey Methodology

The 1978 Recent College Graduates Survey (RCGS) is the source of the estimates which appear in this report. The National Center for Education Statistics contracted with the National Opinion Research Center to collect these data. The major purposes for the survey were to estimate the number of recent college graduates who were qualified to teach and to describe their performance in the labor force.

Sample Design

The 1978 RCGS was a mail sample survey of persons who received a bachelor's or master's degree in school year 1976-1977. The survey was conducted in the spring of 1978.

The RCGS was a two-stage stratified, cluster sample. The first stage was a sample of institutions which awarded bachelor's or master's degrees in 1976-77, according to that year's Higher Education General Information Survey (HEGIS). The institutions were stratified by percent of education graduates, control (private/public), degree of emphasis on special education, and geographic region. Those institutions defined to be predominately black were placed in a separate stratum. A sample of 297 institutions was selected with probability proportional to the institution's measure of size. The measure of size was a function of the number of graduates and the percentage of education graduates in the institution.

The second stage was the selection of graduates from the sample institutions. The graduates were first stratified by major field (special education/other education/other major field). The sampling rate used to select graduates varies by strata; however, all graduates within a stratum were sampled at a fixed rate. Thus, all "special education" graduates had the same overall probability of selection which differed from probability used for "other education" graduates. In all 11,729 graduates were selected.

After the planned survey was completed, the response rate was examined and deemed to be too low (see Reliability section). A follow-up sample was conducted to reduce the potential bias due to non-response. One-fourth of the non-responding graduates were sampled for intensive

follow-up. Graduates from predominately black institutions were followed-up at twice that rate because they had a considerably lower response rate.

A ratio estimate was used to inflate the data to national figures. The 1976-77 HEGIS counts of graduates by stratum were the basis for the ratios. A special weighting for the graduates in the follow-up was done to adjust for the sub-sampling.

Reliability

The statistics that appear in this report are based on a sample. In a sample, two types of errors can occur: 1) Sampling errors which arise because only a portion of the universe is surveyed; and 2) nonsampling errors which are intrinsic to the survey. Nonsampling errors can come from coding mistakes, faulty questionnaire design, incomplete responses and a variety of other sources.

The realized 1978 RCGS is just one of many samples of the same size that could have been selected using the same design. The estimates derived from different samples would not be identical. The standard error of the estimate is a measure of the difference between the sample estimates and their average value in all possible samples. The coefficient of variation is defined as the standard error of the estimate divided by the estimate. It is a measure of relative precision.

Estimating the standard errors of estimate permit us to construct confidence intervals that have prescribed probabilities of covering the average of all possible samples. For example, an interval from one standard error below the estimate of the average value to one standard error above the estimate would include the average from all possible samples 67 percent of the time. An interval from two standard errors below the estimate to two standard errors above the estimate would include the average of all possible samples 95 percent of the time. The average of all possible samples may or may not be contained in a constructed interval.

Table A contains estimates of the coefficients of variation for the population estimates shown in table 1. The

Table A.—Approximate coefficients of variation for selected estimates

Major field group	Total bachelor's recipients	Percent of total bachelor's recipients who are employed full-time	Unemployment rate	Percent of bachelor's recipients employed full-time who are under-employed	Average annual salary for principal job held by bachelor's recipients employed full-time
Total	.01	.02	.03	.02	.01
Professional fields	.02	.03	.06	.05	.01
Business & management	.03	.06	.13	.07	.02
Education	.02	.03	.12	.07	.01
Engineering	.06	.14	.20	.24	.02
Health professions	.05	.13	.18	.20	.02
Public affairs and social services	.12	.22	.23	.24	.05
Arts & sciences	.02	.04	.05	.06	.02
Biological sciences	.05	.10	.10	.13	.03
Mathematics	.17	.22	.47	.29	.07
Physical sciences	.12	.23	.26	.30	.04
Psychology	.06	.13	.14	.17	.04
Social Sciences	.04	.07	.12	.10	.03
Humanities	.05	.13	.11	.16	.03

coefficients of variation can be used in constructing confidence intervals around the population estimates. For example, table 1 shows that an estimated 83 percent of bachelor's recipients in business and management are employed full-time. The estimated coefficient of variation for this estimate is shown in table A to be 0.06. The standard error of the estimate of 83 percent is roughly 5 percent (83 percent x 0.06), and two standard errors is roughly 10 percent. Two standard errors above and below the estimate of 83 percent includes the average from all possible samples 95 percent of the time. Therefore, a 95 percent confidence interval is 83 percent ± 10 percent (73 percent to 93 percent).

The sample for this survey was not designed to make comparisons among the major field groups at specific precision levels. Consequently, the sampling errors for the major field groups vary considerably and differences between fields that have relatively small representations in the population of bachelor's recipients should be interpreted with caution.

One of the most obvious and important sources of nonsampling error is the failure to obtain complete responses from each sample unit. As noted earlier, the response rate for RCGS was not acceptable after the initial effort and a follow-up was conducted. The response rate for the overall sample as well as that for the individual phases is given in table B. Table C shows the sample size overall response rate for various strata.

Table B—Sample size and response rates by phase

	Overall phases		
Sampled institutions	297		
Responding institutions	283 (95.3%)		
Total sampled graduates	11,729		
Net sampled graduates[1]	10,949		
Completed cases[2]	7,867 (71.9%)		
Adjusted completed cases[3]	9,592 (87.6%)		
	Initial sample		
Total sampled graduates	11,729		
Net sampled graduates[1]	11,025		
Completed cases[2]	7,399		
Adjusted completed cases[3]	7,922		
		Follow-up sample	
	Graduates from predominately black institutions		Graduates from other institutions
Total subsampled graduates	190		572
Net subsampled graduates[1]	182		557
Completed cases[2]	101		367

Notes: [1]Excludes graduates who were out-of-scope, e.g. received their degree in a different year.

[2]Graduates from whom responses were obtained, even if every item on the form was not completed.

[3]Estimated completion rate when factors for subsampling at different stages are taken into account.

Table C.—Sample size and response rates by stratum

	Graduates			
	Sample size	Out-of-scope	Adjusted completed[1]	Response rate (percent)[2]
Type of institution				
Total	11,729	780	9,592	87.6
Predominately black	913	56	688	77.9
Low percent education majors	8,599	628	6,984	87.6
Medium percent education majors	1,215	61	1,053	91.2
High percent education majors	1,002	35	887	91.7
Major field of study				
Total	11,729	780	9,592	87.6
Bachelor's recipients				
Special or vocational education	874	33	793	94.3
Other education	1,549	57	1,340	89.8
Not education	5,913	368	4,837	87.2
Master's recipients	3,393	322	2,622	85.4

[1]Includes weighting of respondents by factors of 2 or 4 if subsampled.
[2]Adjusted response rate divided by (sample size - out-of-scopes).

A ratio estimate was used to inflate the data from the respondents. This acts as a partial adjustment for nonresponse by increasing the inflation factors for the respondents. The assumption underlying this adjustment is that the nonrespondents in the stratum are "similar" to the respondents.

No adjustment was made for item nonresponse (item nonresponse is defined as a responding unit not providing an answer for at least one particular question). The item nonresponse was placed in the "other" category, or if no "other" category was used, it was deleted from the tables. In many instances the item nonresponse was relatively small. Major field of study had an item nonresponse rate of about 0.3 percent. This will cause a slight underestimate of the number of graduates by major field of study.

Appendix 3

HEGIS classification of major fields

0100 AGRICULTURE AND NATURAL RESOURCES

- 0101 AGRICULTURE, GENERAL
- 0102 AGRONOMY
- 0103 SOILS SCIENCE
- 0104 ANIMAL SCIENCE
- 0105 DAIRY SCIENCE
- 0106 POULTRY SCIENCE
- 0107 FISH, GAME, AND WILDLIFE MANAGEMENT
- 0108 HORTICULTURE
- 0109 ORNAMENTAL HORTICULTURE
- 0110 AGRICULTURAL AND FARM MANAGEMENT
- 0111 AGRICULTURAL ECONOMICS
- 0112 AGRICULTURAL BUSINESS
- 0113 FOOD SCIENCE AND TECHNOLOGY
- 0114 FORESTRY
- 0115 NATURAL RESOURCES MANAGEMENT
- 0116 AGRICULTURE AND FORESTRY TECHNOLOGIES
- 0117 RANGE MANAGEMENT
- 0199 OTHER

0200 ARCHITECTURE AND ENVIRONMENTAL DESIGN

- 0201 ENVIRONMENTAL DESIGN, GENERAL
- 0202 ARCHITECTURE
- 0203 INTERIOR DESIGN
- 0204 LANDSCAPE ARCHITECTURE
- 0205 URBAN ARCHITECTURE
- 0206 CITY, COMMUNITY, AND REGIONAL PLANNING
- 0299 OTHER

0300 AREA STUDIES

- 0301 ASIAN STUDIES, GENERAL
- 0302 EAST ASIAN STUDIES
- 0303 SOUTH ASIAN (INDIA, ETC.) STUDIES
- 0304 SOUTHEAST ASIAN STUDIES
- 0305 AFRICAN STUDIES
- 0306 ISLAMIC STUDIES
- 0307 RUSSIAN AND SLAVIC STUDIES
- 0308 LATIN AMERICAN STUDIES
- 0309 MIDDLE EASTERN STUDIES
- 0310 EUROPEAN STUDIES, GENERAL
- 0311 EASTERN EUROPEAN STUDIES
- 0312 WEST EUROPEAN STUDIES
- 0313 AMERICAN STUDIES
- 0314 PACIFIC AREA STUDIES
- 0399 OTHER

0400 BIOLOGICAL SCIENCES

- 0401 BIOLOGY, GENERAL
- 0402 BOTANY, GENERAL
- 0403 BACTERIOLOGY
- 0404 PLANT PATHOLOGY
- 0405 PLANT PHARMACOLOGY
- 0406 PLANT PHYSIOLOGY
- 0407 ZOOLOGY, GENERAL
- 0408 PATHOLOGY, HUMAN AND ANIMAL
- 0409 PHARMACOLOGY, HUMAN AND ANIMAL
- 0410 PHYSIOLOGY, HUMAN AND ANIMAL
- 0411 MICROBIOLOGY
- 0412 ANATOMY
- 0413 HISTOLOGY
- 0414 BIOCHEMISTRY
- 0415 BIOPHYSICS
- 0416 MOLECULAR BIOLOGY
- 0417 CELL BIOLOGY
- 0418 MARINE BIOLOGY
- 0419 BIOMETRICS AND BIOSTATISTICS
- 0420 ECOLOGY
- 0421 ENTOMOLOGY
- 0422 GENETICS
- 0423 RADIOBIOLOGY
- 0424 NUTRITION, SCIENTIFIC
- 0425 NEUROSCIENCES
- 0426 TOXICOLOGY
- 0427 EMBRYOLOGY
- 0499 OTHER

0500 BUSINESS AND MANAGEMENT

- 0501 BUSINESS AND COMMERCE, GENERAL
- 0502 ACCOUNTING
- 0503 BUSINESS STATISTICS
- 0504 BANKING AND FINANCE
- 0505 INVESTMENTS AND SECURITIES
- 0506 BUSINESS MANAGEMENT AND ADMINISTRATION
- 0507 OPERATIONS RESEARCH
- 0508 HOTEL AND RESTAURANT MANAGEMENT
- 0509 MARKETING AND PURCHASING
- 0510 TRANSPORTATION AND PUBLIC UTILITIES

0500 BUSINESS AND MANAGEMENT

- 0511 REAL ESTATE
- 0512 INSURANCE
- 0513 INTERNATIONAL BUSINESS
- 0514 SECRETARIAL STUDIES
- 0515 PERSONNEL MANAGEMENT
- 0516 LABOR AND INDUSTRIAL RELATIONS
- 0517 BUSINESS ECONOMICS
- 0599 OTHER

0600 COMMUNICATIONS

- 0601 COMMUNICATIONS, GENERAL
- 0602 JOURNALISM
- 0603 RADIO - TELEVISION
- 0604 ADVERTISING
- 0605 COMMUNICATION MEDIA
- 0699 OTHER

0700 COMPUTER AND INFORMATION SCIENCES

- 0701 COMPUTER AND INFORMATION SCIENCES, GENERAL
- 0702 INFORMATION SCIENCES AND SYSTEMS
- 0703 DATA PROCESSING
- 0704 COMPUTER PROGRAMMING
- 0705 SYSTEMS ANALYSIS
- 0799 OTHER

0800 EDUCATION

- 0801 EDUCATION, GENERAL
- 0802 ELEMENTARY EDUCATION, GENERAL
- 0803 SECONDARY EDUCATION, GENERAL
- 0804 JUNIOR HIGH SCHOOL EDUCATION
- 0805 HIGHER EDUCATION, GENERAL
- 0806 JUNIOR AND COMMUNITY COLLEGE EDUCATION
- 0807 ADULT AND CONTINUING EDUCATION
- 0808 SPECIAL EDUCATION, GENERAL
- 0809 ADMINISTRATION OF SPECIAL EDUCATION
- 0810 EDUCATION OF THE MENTALLY RETARDED
- 0811 EDUCATION OF THE GIFTED
- 0812 EDUCATION OF THE DEAF
- 0813 EDUCATION OF THE CULTURALLY DISADVANTAGED
- 0814 EDUCATION OF THE VISUALLY HANDICAPPED
- 0815 SPEECH CORRECTION
- 0816 EDUCATION OF THE EMOTIONALLY DISTURBED
- 0817 REMEDIAL EDUCATION
- 0818 SPECIAL LEARNING DISABILITIES
- 0819 EDUCATION OF THE PHYSICALLY HANDICAPPED
- 0820 EDUCATION OF THE MULTIPLE HANDICAPPED
- 0821 SOCIAL FOUNDATIONS
- 0822 EDUCATIONAL PSYCHOLOGY
- 0823 PRE-ELEMENTARY EDUCATION
- 0824 EDUCATIONAL STATISTICS AND RESEARCH
- 0825 EDUCATIONAL TESTING, EVALUATION AND MEASUREMENT
- 0826 STUDENT PERSONNEL
- 0827 EDUCATIONAL ADMINISTRATION
- 0828 EDUCATIONAL SUPERVISION
- 0829 CURRICULUM AND INSTRUCTION
- 0830 READING EDUCATION
- 0831 ART EDUCATION
- 0832 MUSIC EDUCATION
- 0833 MATHEMATICS EDUCATION
- 0834 SCIENCE EDUCATION
- 0835 PHYSICAL EDUCATION
- 0836 DRIVER AND SAFETY EDUCATION
- 0837 HEALTH EDUCATION
- 0838 BUSINESS, COMMERCE, AND DISTRIBUTIVE EDUCATION
- 0839 INDUSTRIAL ARTS, VOCATIONAL & TECHNICAL EDUCATION
- 0899-1 AGRICULTURAL EDUCATION
- 0899-2 EDUC. OF EXCEPTIONAL CHILDREN, NOT CLASSIFIED ABOV
- 0899-3 HOME ECONOMICS EDUCATION
- 0899-4 NURSING EDUCATION
- 0899 OTHER

0900 ENGINEERING

- 0901 ENGINEERING, GENERAL
- 0902 AEROSPACE, AERONAUTICAL, ASTRONAUTICAL ENGR.
- 0903 AGRICULTURAL ENGINEERING
- 0904 ARCHITECTURAL ENGINEERING
- 0905 BIOENGINEERING AND BIOMEDICAL ENGINEERING
- 0906 CHEMICAL ENGINEERING
- 0907 PETROLEUM ENGINEERING
- 0908 CIVIL, CONSTRUCTION, & TRANSPORTATION ENGINEERING
- 0909 ELECTRICAL, ELECTRONICS, COMMUNICATIONS ENGR.
- 0910 MECHANICAL ENGINEERING
- 0911 GEOLOGICAL ENGINEERING
- 0912 GEOPHYSICAL ENGINEERING
- 0913 INDUSTRIAL AND MANAGEMENT ENGINEERING
- 0914 METALLURGICAL ENGINEERING

Source: Earned Degrees Conferred, National Center for Education Statistics, U.S. Department of Education

0900 ENGINEERING

0915 MATERIALS ENGINEERING
0916 CERAMIC ENGINEERING
0917 TEXTILE ENGINEERING
0918 MINING AND MINERAL ENGINEERING.
0919 ENGINEERING PHYSICS

0920 NUCLEAR ENGINEERING
0921 ENGINEERING MECHANICS
0922 ENVIRONMENTAL AND SANITARY ENGINEERING.
0923 NAVAL ARCHITECTURE AND MARINE ENGINEERING
0924 OCEAN ENGINEERING
0925 ENGINEERING TECHNOLOGIES.
0999 OTHER

1000 FINE AND APPLIED ARTS

1001 FINE ARTS, GENERAL.
1002 ART
1003 ART HISTORY AND APPRECIATION.
1004 MUSIC (PERFORMING, COMPOSITION, THEORY)
1005 MUSIC (LIBERAL ARTS PROGRAM).

1006 MUSIC HISTORY AND APPRECIATION.
1007 DRAMATIC ARTS
1008 DANCE
1009 APPLIED DESIGN.
1010 CINEMATOGRAPHY.
1011 PHOTOGRAPHY
1099 OTHER

1100 FOREIGN LANGUAGES

1101 FOREIGN LANGUAGES, GENERAL.
1102 FRENCH.
1103 GERMAN.
1104 ITALIAN
1105 SPANISH

1106 RUSSIAN
1107 CHINESE
1108 JAPANESE.
1109 LATIN
1110 GREEK, CLASSICAL.

1111 HEBREW.
1112 ARABIC.
1113 INDIAN (ASIATIC).
1114 SCANDINAVIAN LANGUAGES.
1115 SLAVIC LANGUAGES (OTHER THAN RUSSIAN)
1116 AFRICAN LANGUAGES (NON-SEMITIC)
1199 OTHER

1200 HEALTH PROFESSIONS

1201 HEALTH PROFESSIONS, GENERAL
1202 HOSPITAL AND HEALTH CARE ADMINISTRATION
1203 NURSING
1205 DENTAL SPECIALTIES.
1207 MEDICAL SPECIALTIES

1208 OCCUPATIONAL THERAPY.
1209-2 OPTOMETRY
1211-2 PHARMACY.
1212 PHYSICAL THERAPY.
1213 DENTAL HYGIENE.

1214 PUBLIC HEALTH
1215 MEDICAL RECORD LIBRARIANSHIP.
1216-2 PODIATRY OR PODIATRIC MEDICINE.
1217 BIOMEDICAL COMMUNICATION.
1219 VETERINARY MEDICINE SPECIALTIES

1220 SPEECH PATHOLOGY AND AUDIOLOGY.
1221-2 CHIROPRACTIC.
1222 CLINICAL SOCIAL WORK.
1223 MEDICAL LABORATORY TECHNOLOGIES
1224 DENTAL TECHNOLOGIES
1225 RADIOLOGIC TECHNOLOGIES
1299 OTHER

1300 HOME ECONOMICS

1301 HOME ECONOMICS, GENERAL
1302 HOME DECORATION AND HOME EQUIPMENT.
1303 CLOTHING AND TEXTILES
1304 CONSUMER ECONOMICS AND HOME MANAGEMENT.
1305 FAMILY RELATIONS AND CHILD DEVELOPMENT.

1306 FOODS AND NUTRITION
1307 INSTITUTIONAL MANAGEMENT AND CAFETERIA MANAGEMENT
1399 OTHER

1400 LAW

1401-2 LAW, GENERAL.
1499 OTHER

1500 LETTERS

1501 ENGLISH, GENERAL.
1502 LITERATURE, ENGLISH
1503 COMPARATIVE LITERATURE.

1504 CLASSICS.
1505 LINGUISTICS
1506 SPEECH, DEBATE, AND FORENSIC SCIENCE.
1507 CREATIVE WRITING.
1508 TEACHING OF ENGLISH AS A FOREIGN LANGUAGE

1509 PHILOSOPHY.
1510 RELIGIOUS STUDIES
1599 OTHER

1600 LIBRARY SCIENCE

1601 LIBRARY SCIENCE, GENERAL.
1699 OTHER

1700 MATHEMATICS

1701 MATHEMATICS, GENERAL.
1702 STATISTICS, MATHEMATICAL AND THEORETICAL.
1703 APPLIED MATHEMATICS
1799 OTHER

1800 MILITARY SCIENCES

1801 MILITARY SCIENCE (ARMY)
1802 NAVAL SCIENCE (NAVY, MARINES)
1803 AEROSPACE SCIENCE (AIR FORCE)
1899-1 MERCHANT MARINE
1899 OTHER

1900 PHYSICAL SCIENCES

1901 PHYSICAL SCIENCES, GENERAL.
1902 PHYSICS, GENERAL.
1903 MOLECULAR PHYSICS
1904 NUCLEAR PHYSICS
1905 CHEMISTRY, GENERAL.

1906 INORGANIC CHEMISTRY
1907 ORGANIC CHEMISTRY
1908 PHYSICAL CHEMISTRY.
1909 ANALYTICAL CHEMISTRY.
1910 PHARMACEUTICAL CHEMISTRY.

1911 ASTRONOMY
1912 ASTROPHYSICS.
1913 ATMOSPHERIC SCIENCES AND METEOROLOGY.
1914 GEOLOGY
1915 GEOCHEMISTRY.

1916 GEOPHYSICS AND SEISMOLOGY
1917 EARTH SCIENCES, GENERAL
1918 PALEONTOLOGY.
1919 OCEANOGRAPHY.
1920 METALLURGY.
1999-1 OTHER EARTH SCIENCES.
1999-2 OTHER PHYSICAL SCIENCES

2000 PSYCHOLOGY

2001 PSYCHOLOGY, GENERAL
2002 EXPERIMENTAL PSYCHOLOGY
2003 CLINICAL PSYCHOLOGY
2004 PSYCHOLOGY FOR COUNSELING
2005 SOCIAL PSYCHOLOGY

2006 PSYCHOMETRICS
2007 STATISTICS IN PSYCHOLOGY.
2008 INDUSTRIAL PSYCHOLOGY
2009 DEVELOPMENTAL PSYCHOLOGY.
2010 PHYSIOLOGICAL PSYCHOLOGY.
2099 OTHER

2100 PUBLIC AFFAIRS AND SERVICES

2101 COMMUNITY SERVICES, GENERAL
2102 PUBLIC ADMINISTRATION
2103 PARKS AND RECREATION MANAGEMENT
2104 SOCIAL WORK AND HELPING SERVICES.
2105 LAW ENFORCEMENT AND CORRECTIONS
2106 INTERNATIONAL PUBLIC SERVICE.
2199 OTHER

2200 SOCIAL SCIENCES

2201 SOCIAL SCIENCES, GENERAL
2202 ANTHROPOLOGY.
2203 ARCHAEOLOGY
2204 ECONOMICS
2205 HISTORY

2206 GEOGRAPHY
2207 POLITICAL SCIENCE AND GOVERNMENT.
2208 SOCIOLOGY
2209 CRIMINOLOGY
2210 INTERNATIONAL RELATIONS

2211 AFRO-AMERICAN (BLACK CULTURE) STUDIES
2212 AMERICAN INDIAN CULTURAL STUDIES.
2213 MEXICAN - AMERICAN CULTURAL STUDIES
2214 URBAN STUDIES
2215 DEMOGRAPHY.

2200 SOCIAL SCIENCES

2299 OTHER

2300 THEOLOGY

2301-2 THEOLOGICAL PROFESSIONS, GENERAL.
2302 RELIGIOUS MUSIC
2303 BIBLICAL LANGUAGES.
2304 RELIGIOUS EDUCATION
2399 OTHER

4900 INTERDISCIPLINARY STUDIES

4901 GENERAL LIBERAL ARTS AND SCIENCES
4902 BIOLOGICAL AND PHYSICAL SCIENCES.
4903 HUMANITIES AND SOCIAL SCIENCES.
4904 ENGINEERING AND OTHER DISCIPLINES
4999 OTHER

Appendix 4

Major field classification code groups

Bachelor's Recipients

Major Field Code	Major Field Title	Number
	Total	929,748
	Professions	437,154
0500-0599	Business and Management	162,179
0501	Business and Commerce, general	11,973
0502	Accounting	44,071
0506	Business Management and Administration	70,007
0509	Marketing and Purchasing	17,557
0503-0505, 0507-0508, 0510-0599	Other Business and Management	18,550
0800-0899	Education	138,155
0802	Elementary Education, general	49,627
0808-0820	Special Education	18,797
0835	Physical Education	17,437
0801, 0803-0807, 0821-0834, 0836-0899	Other Education	52,294
0900-0999	Engineering	54,421
0908	Civil	12,923
0909	Electrical	13,262
0901-0907, 0910-0999	Other	28,236
1200-1299	Health	61,294
1203	Nursing	31,231
1201, 1202, 1204-1299	Other	30,062
2100-2199	Public affairs and services	21,105
2104	Social work and helping services	9,437
2100-2103, 2106-2199, 9994, 9995, 1222	Other	11,668
	Arts and sciences	369,423
0400-0499	Biological sciences	69,039
0401	Biology, general	40,558
0402-0499	Other	28,481
1700-1799	Mathematics	13,147
1900-1999	Physical sciences	23,237
1905	Chemistry	12,087
1900-1904, 1906-1999	Other	11,668
2000-2099	Psychology	57,840
2200-2299	Social Sciences	118,086
2204	Economics	16,825
2205	History	30,270
2207	Political science and government	27,625
2208	Sociology	23,827
2201-2203, 2206, 2209-2299	Other	19,549
1000-1099, 1100-1199, 1500-1599	Humanities	88,063
1000-1099	Fine and applied arts	38,686
1100-1199	Foreign languages	10,776
1500-1599	Letters	38,601
	Other	120,668
0100-0199	Agriculture and natural resources	17,019
0600-0699	Communications	28,385
0200-0299	Architecture	14,417
1300-1399	Home Economics	17,411
2105	Law enforcement and corrections	18,108
0300-0399, 0700-0799, 1400-1499, 1600-1699, 1800-1899, 2300-2399, 4900-4999, 9996	Other	25,329
9997-9999	Nonresponse	2,515

GPO 889-867